

VACATION OBSERVATIONS.—III

BY FRANCIS E. LLOYD

Behavior of the Spores in Polytrichum.—A remarkably pretty demonstration of the behavior of the spores during their dissemination may be had in *Polytrichum* if one examines the dry sporogonium after the operculum has been removed. The observer must hold the seta between the thumb and finger of one hand with the diaphragm of the capsule opposite the eye, the capsule being so placed that the light shines through the diaphragm and at the same time so tilted that the dry spore mass falls against it. The seta must now be gently tapped so as to make the capsule vibrate, when the spores will escape between the shrunken teeth of the peristome and be scattered. The point of special interest here is the manner in which the spore-mass rolls around in the capsule and falls, in this way and that, against the diaphragm. The spores appear, in their movements, as of considerable weight, an illusion caused by the extreme ease with which they roll over one another. This, of course, is due to their very great dryness, and, possibly, to surface characters.

The Color of the Spores in Polytrichum.—The writer does not recall that it has been heretofore pointed out that the ripe spores of *Polytrichum commune* and those of *P. Ohioense* differ very markedly from each other in color when seen *en masse*. Indeed, the amount of difference is so great that the beginner would be able to distinguish the species very readily. In *P. commune* the color is yellow-green; in *P. Ohioense*, brown-yellow. Corresponding differences in the structure of the spores are seen on microscopic examination. Those of the former are smaller, and more densely filled with protoplasm, and the coloring more readily seen than in those of the latter species; the vacuole is very much larger, also, in the spore of *P. Ohioense*.

Destruction of Mosses by Fungi.—Apparently but very little attention has been directed to the relations of mosses and fungi. Whether any specific diseases in mosses are caused by fungi is an open question. Nevertheless, under certain conditions, such as prevailed during July of last year, in northern Massachusetts,

large patches of *Polytrichum commune* were killed by a fungus, probably a *Mucor*-like organism, which grew like a white mat, smothering the moss turf, and causing the plants to die rapidly and turn brown. Just what the action of the fungus is, remains to be elucidated by investigation, but it seems probable that it kills the moss chiefly by cutting it off from the air.

Similarly a clump of *Dicranum scoparium* and a few neighboring plants of *Polytrichum Ohioense* were observed near Hyannis, Mass., to be attacked by a myxomycete. Some of these low forms creep up upon living plants before sporulation takes place. In this instance death of the capsules was induced with some amount of distortion. The materials promise interest on further study, it being of importance to determine whether in this matter the myxomycete is purely or rather superficially epiphytic, or whether it in some way attacks the deeper-lying tissues. The latter, judging from our present knowledge, is improbable.

Hypomyces. — It is worth mention that the well-known fungus *Hypomyces Lactifluorum*, parasitic on *Lactarius*, is able to propel its spores to a distance of $1\frac{1}{2}$ inches or more. This was determined in the usual fashion of obtaining a spore print. The amount of spore dust obtained in this way is quite surprising.

Having used the dried commercial material of the truffle for anatomical work, I was led to cut into small strips an affected plant of *Lactarius*. The pieces were dried, and then used dry for sectioning by free hand. *Lycoperdon* was treated similarly, with the result that when the curled dry sections are mounted for microscopic examination they are quite satisfactory for ordinary work.

In this way, therefore, the collector may preserve material for anatomical use quite successfully with little trouble.

SHORTER NOTES

LEAVES OF THE SKUNK CABBAGE. — Last July I was much impressed by the size of some leaves of the skunk cabbage growing on Long Island near the College Point water-works. The largest leaf measured $26\frac{1}{2}$ inches long by $19\frac{1}{2}$ broad. Is there record of any larger? A. J. GROUT.